



INSTRUCTION MANUAL

TLS-9072

Time Lapse Video Cassette Recorder

English

Magnétoscope time lapse à cassette

Français

Videograbador en lapsos de tiempo

Español



Please read this manual and accompanying "IMPORTANT SAFETY INSTRUCTIONS" sheet carefully before connecting your VCR and operating it for the first time.

Be sure to read carefully and follow all the PRECAUTIONS on page 1.

Keep the manual in a safe place for future reference.

PRECAUTIONS



CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING: To reduce the risk of fire or electric shock, do not expose this appliance to rain or other moisture.

CAUTION: Changes or modifications not expressly approved by the manufacturer may void the user's authority to operate this equipment.

For the customers in Canada

This class B digital apparatus complies with Canadian ICES-003.

Location

For safe operation and satisfactory performance of your VCR, keep the following in mind when selecting a place for its installation:

- Shield it from direct sunlight and keep it away from sources of intense heat.
- Avoid dusty or humid places.
- Avoid places with insufficient ventilation for proper heat dissipation. Do not block the ventilation holes of the VCR. Do not place the unit on a carpet because this will block the ventilation holes.
- Install the VCR in a horizontal position only.
- Avoid locations subject to strong vibrations.
- Avoid moving the VCR between cold and hot locations (see "Moisture Condensation Problems", this page).
- Do not place the VCR directly on top of the TV, as this may cause playback or recording problems.

Avoiding Electrical Shock and Fire

- Do not handle the power cord with wet hands.
- Do not pull on the power cord when disconnecting it from an AC wall outlet. Grasp it by the plug.
- If any liquid is spilled on the VCR, unplug the power cord immediately and have the unit inspected at a factory-authorized service center.
- Do not place anything directly on top of this VCR.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generated, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Moisture Condensation Problems

Cause:

When the VCR is first installed, moved from a cold area to a warm area or placed in a location with high humidity, dew (moisture) may form in the unit. The Dew indicator (dddd) blinks. If you operate the VCR with dew inside, damage may result.

Prevention:

- ① Make all necessary connections.
- ② Plug the power cord into a 120 V AC wall outlet.
- ③ Do not operate the VCR for approximately 2 hours.

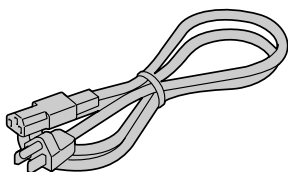
When the VCR reaches room temperature, the Dew indicator (dddd) will turn off and the VCR will be ready to operation.

FEATURES

- Tape management function
- Clog detection
- High-speed Fast Forward/Rewind
- Field recording/playback
- 2, 12, 24, 48 and 72-hour mode recording
- In 2, 12, 24-hour modes audio recording is available
- Autorepeat recording
- Alarm recording function
- On-screen mode setting
- Integrated time date generator
- Day/Time search function
- Alarm search and Alarm scan function
- Forward/Reverse field advance function
- 30-day memory backup
- Security lock
- Recording check function
- Automatic head cleaning function

ACCESSORY

Power cord

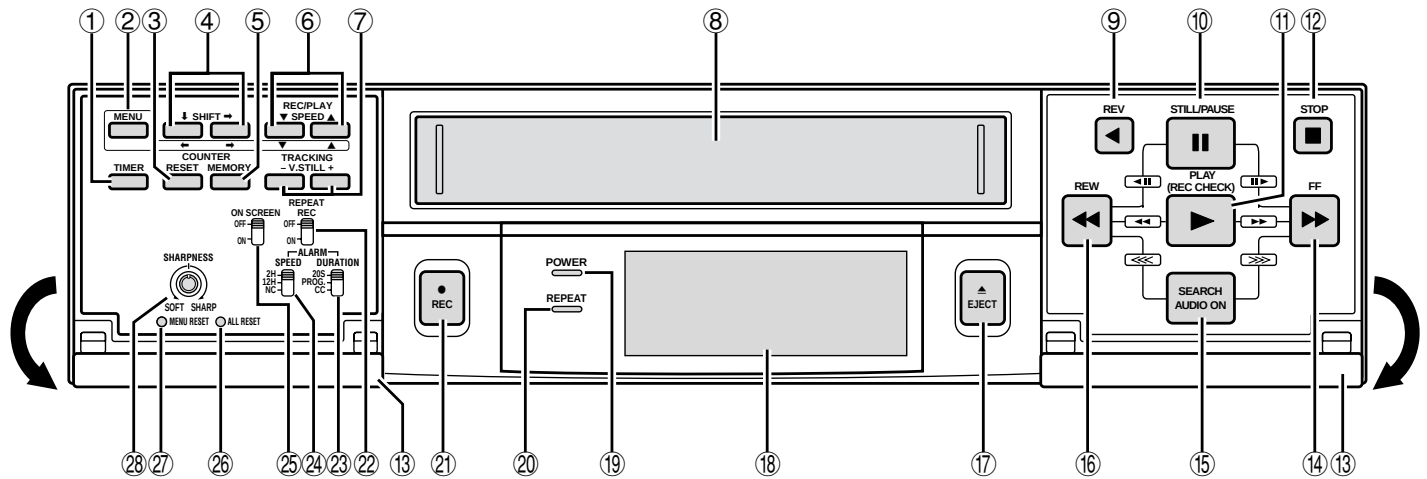


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LOCATIONS OF CONTROLS AND INDICATORS

Front Panel



- ① **TIMER** button
- ② **MENU** button
- ③ **COUNTER RESET** button
- ④ **SHIFT** ↓, → (display position down, right) buttons
←, → (on-screen menu cursor left, right) buttons
- ⑤ **COUNTER MEMORY** button
- ⑥ **REC/PLAY SPEED** ▼, ▲ (decrease, increase recording/playback speed mode) buttons
▼, ▲ (change the on-screen menu settings or numerical values) buttons
- ⑦ **TRACKING/V. STILL** -, + buttons
- ⑧ Cassette loading slot
- ⑨ **REV** (reverse playback) button
- ⑩ **STILL/PAUSE** button
- ⑪ **PLAY (REC CHECK)** button
- ⑫ **STOP** button
- ⑬ Front door
- ⑭ **FF** (fast forward) button
- ⑮ **SEARCH/AUDIO ON** button
- ⑯ **REW** (rewind) button
- ⑰ **EJECT** button

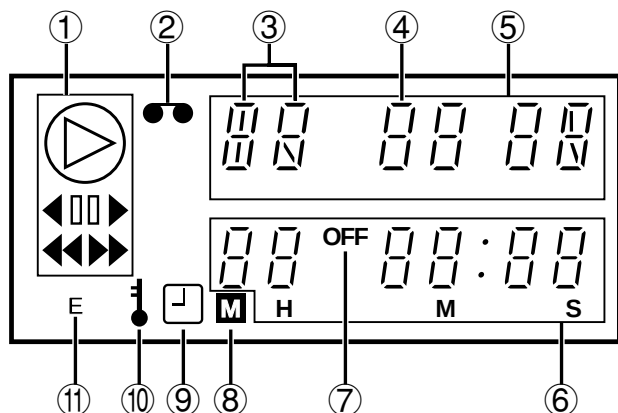
- ⑱ Digital display panel
- ⑲ **POWER** indicator
- ⑳ **REPEAT** (autorepeat recording) indicator
- ㉑ **REC** (record) button
- ㉒ **REPEAT REC** (autorepeat recording) switch
- ㉓ **ALARM DURATION** (alarm recording time) switch
- ㉔ **ALARM SPEED** (alarm recording speed) switch
- ㉕ **ON SCREEN** switch
- ㉖ **ALL RESET** button
- ㉗ **MENU RESET** button
- ㉘ **SHARPNESS** control

NOTE:

- Button ④ and ⑥ are also used for on-screen menus setting.
In this manual, to distinguish between the functions of each button, when giving instructions that are related to an on-screen menu setting or operation, "press the ▼, ▲, ← or → button" will be used.

LOCATIONS OF CONTROLS AND INDICATORS

Digital Display



① Operation Indicators

- They display the actual operation mode.

Operation Mode	Indicator
Record (REC)	○
Record pause (REC PAUSE)	○ +
Playback (PLAY)	▷
Still image (STILL)	▷ +
Fast forward (FF)	⏏
Rewind (REW)	⏮
Forward picture search	▷ + ⏏
Reverse picture search	▷ + ⏮
Reverse playback	▷ +
Field shift forward	▷ +
Field shift backward	▷ +

- Clog detection indicator
 - Flashes when the recording quality deteriorates due to dirty VCR heads.

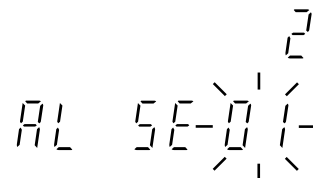
- ② Cassette indicator
 - Comes on when a cassette is loaded.
 - Flashes during thread check function.

- ③ Alarm indicator
 - Flashes when an alarm is being recorded:
 - Comes on after the alarm has been recorded:

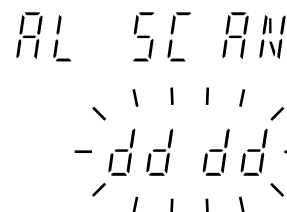


- ④ Power failure indicator
 - Comes on after a power failure.

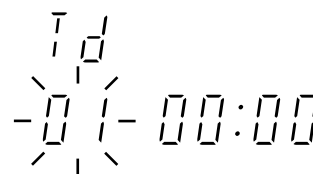
- ⑤ Mode display
 - Recording/playback speed mode
 - Alarm search mode



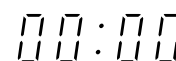
- Alarm scan mode
- Dew display



- Day/Time search mode



- ⑥ Counter display
 - Time display



- Linear time counter display



- ⑦ OFF indicator **OFF**
 - Comes on when the tape end has been reached after a recording, except during autorepeat recording mode.

- ⑧ Counter memory indicator **M**
 - Comes on when the counter memory function is engaged.

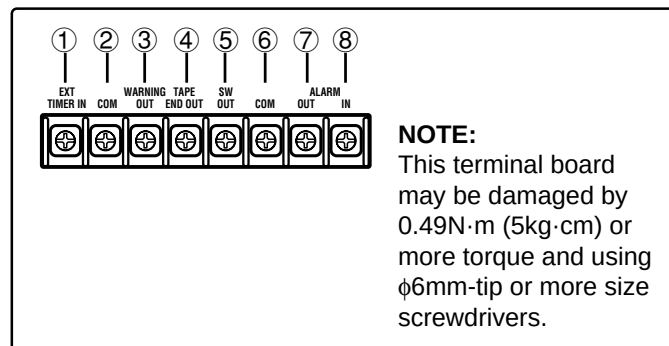
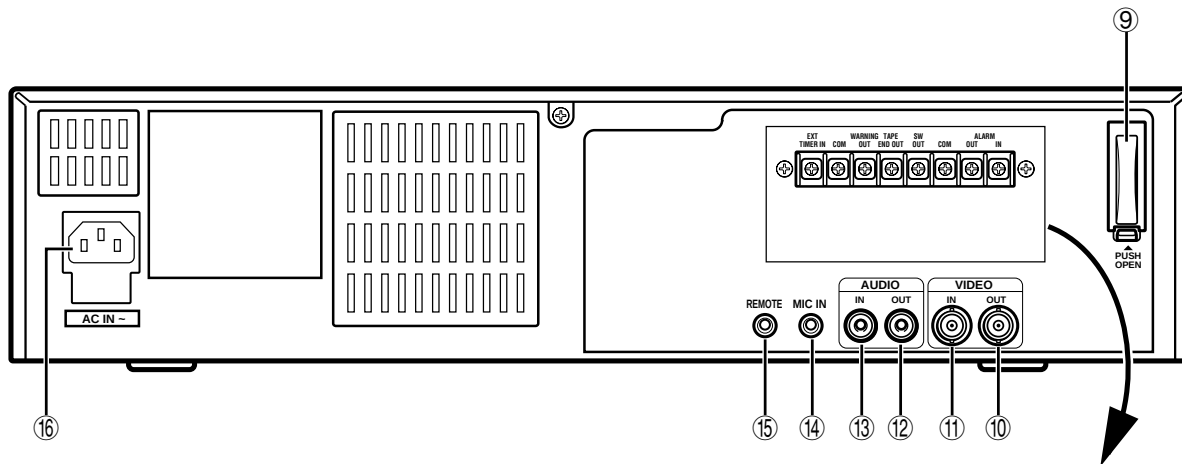
- ⑨ Timer Recording indicator
 - Comes on when in timer recording stand-by mode, or during a timer recording.

- ⑩ Security lock indicator
 - Comes on when the security lock is engaged.

- ⑪ External timer input indicator **E**
 - Comes on when recording using the **EXT TIMER IN** input terminal.

LOCATIONS OF CONTROLS AND INDICATORS

Back Panel

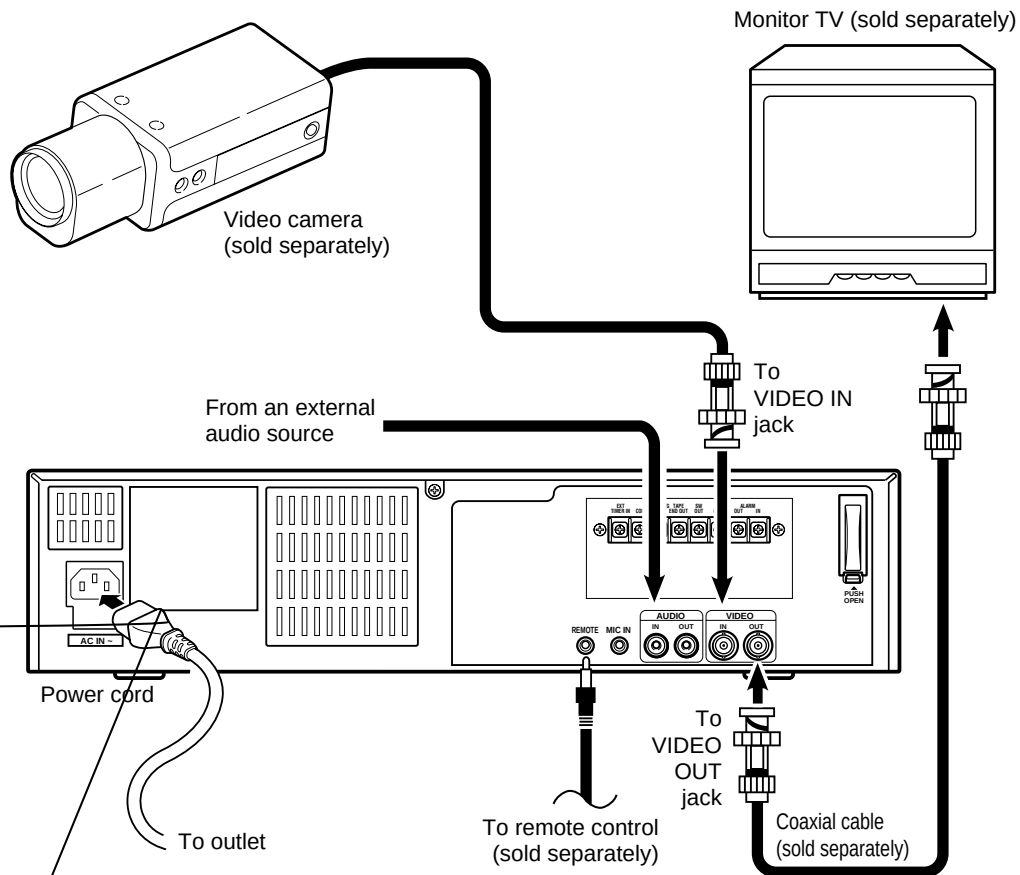


- | | |
|--|--------------------------------------|
| ① EXT TIMER IN (external timer input) terminal | ⑩ VIDEO OUT (video output) jack |
| ② COM (common) terminal | ⑪ VIDEO IN (video input) jack |
| ③ WARNING OUT (warning output) terminal | ⑫ AUDIO OUT (audio output) jack |
| ④ TAPE END OUT (tape end output) terminal | ⑬ AUDIO IN (audio input) jack |
| ⑤ SW OUT (switch output) terminal | ⑭ MIC IN (microphone input) jack |
| ⑥ COM (common) terminal | ⑮ REMOTE (remote control input) jack |
| ⑦ ALARM OUT (alarm output) terminal | ⑯ AC power input |
| ⑧ ALARM IN (alarm input) terminal | |
| ⑨ Battery compartment | |

CONNECTIONS

Connect the video camera and monitor TV as shown in the figure below.

NOTE: Before making the connections, make sure the devices are disconnected from the power outlet.



Power Cord Installation

- 1 Plug the supplied power cord firmly into the AC power input **AC IN ~** socket.
- 2 Insert the plug of this power cord into a outlet.

NOTES:

- For more details, please refer to the manuals

ON-SCREEN MENUS

- ① When no menu is displayed on-screen, press the **MENU** button.

- The (SET UP 1) menu appears.
- Press the **MENU** button to save any setting made and switch menu screens.

NOTES:

- If the (POWER FAILURE)/(DEW)/(USED TIME) menu is displayed, pressing the **MENU** button will return to the monitor screen display.
- Press the **MENU** button to save any setting made and switch menu screens.
- Press the **SEARCH/AUDIO ON** to save the settings and return to the monitor screen.
- Within a menu, press the **→** (or **←**) button to move the selection to the desired setting, then press the **▼** (or **▲**) button to enter or modify the setting.

→ button

When a menu is displayed, press this button to move the cursor right (or down). If the **→** button is pressed when the cursor is at the right border of the screen, it will reappear at the next position on the left of the screen.

← button

When a menu is displayed, press this button to move the cursor left (or up). If the **←** button is pressed when the cursor is at the left border of the screen, it will reappear at the previous position on the right of the screen.

▼ (or ▲) button

When a setting is selected within a menu, press this button to modify (decrease (or increase)) the setting or the numerical value.

Types of On-screen Display and Display Sequence

Reference pages are shown in square brackets.

SET UP 1 menu

<SET UP 1>		[9, 34]
*DAYLIGHT SET	NO USE	
ON	WEEK MONTH TIME	
1ST-SUN	04 02:00	
OFF	LST-SUN 10 02:00	
*CLOCK SET		
01-01-00 SAT	00:00:00	
*REMOTE	EJECT	
*LANGUAGE-LANGUE-IDIOMA	ENGLISH	

SET UP 2 menu

<SET UP 2>		[10, 32]
*DISPLAY		
DATE	Y	
TIME	Y	
ALARM COUNT	Y	
SPEED	Y	
*BUZZER		
ALARM IN	Y	
TAPE END	Y	
KEY IN	N	
WARNING	Y	

SET UP 3 menu

<SET UP 3>		[20, 12, 18, 33 18]
*ALARM MODE	Y1	
*ALARM DURATION	20S	
*TAPE IN MODE	STOP	
*TAPE END MODE	REW	
*TAPE END OUT	-3M	
*CLOG DETECT.	Y	

SET UP 4 menu

<SET UP 4>		[33, 12, 17]
*SW OUT		
FIELD	01	
TIMING	FIELD	
2H	Y	
*THREAD CHECK	Y	
*VIDEO LOSS	N	
*REC SPEED	N	

TAPE MANAGEMENT menu

<TAPE MANAGEMENT>		[13-15]
*TAPE MANAGE.	N	
*PROTECT DAY	30	
*REC PASS SET	10	
*GROUP NO.	OFF	
*OVERRIDE	N	

ON-SCREEN MENUS

TIMER SET menu

<TIMER SET>				[23-27]
WEEK	START	STOP	SPD	
SUN	--:--	--:--	--- N	
MON	--:--	--:--	--- N	
TUE	--:--	--:--	--- N	
WED	--:--	--:--	--- N	
THU	--:--	--:--	--- N	
FRI	--:--	--:--	--- N	
SAT	--:--	--:--	--- N	
DLY	--:--	--:--	--- N	
EXT	*****	*****	--- N	

HOLIDAY SET menu

<HOLIDAY SET>				[25]
1	----	11	----	
2	----	12	----	
3	----	13	----	
4	----	14	----	
5	----	15	----	
6	----	16	----	
7	----	17	----	
8	----	18	----	
9	----	19	----	
10	----	20	----	

ALARM TIME menu

<ALARM TIME>				[21]
000	----	--:--		
	----	--:--		
	----	--:--		
	----	--:--		
	----	--:--		
	----	--:--		
	----	--:--		

POWER FAILURE/DEW/USED TIME menu

<POWER FAILURE>				[32]
000	FAILURE	----	--:--	
	RECOVERY	----	--:--	
<DEW>				
000	FAILURE	----	--:--	
	RECOVERY	----	--:--	
<USED TIME>				
	VIDEO		00000H	
	POWER		00000H	

NOTES:

- When a menu is displayed, recording will not be possible.
- During recording or playback the menus cannot be displayed.
- To reset the settings of a menu to their original values, select the desired menu then press the **MENU RESET** button. The (USED TIME) menu data cannot be reset.

SETTING THE LANGUAGE AND CLOCK

Language Setting

English, French or Spanish can be selected by the user.

- ❶ Turn the power on to all devices used.
- ❷ Press the **MENU** button to display the (SET UP 1) menu.

```

<SET UP 1>
*DAYLIGHT SET NO USE
  WEEK MONTH TIME
ON 1ST-SUN 04 02:00
OFF LST-SUN 10 02:00

*CLOCK SET
01-01-00 SAT 00:00:00
*REMOTE EJECT
*LANGUAGE-LANGUE-IDIOMA
ENGLISH
    
```

- ❸ Press the → (or ←) button, until “ENGLISH” is flashing.
- ❹ Press the ▼ (or ▲) button to select the language of your choice.
- ❺ Press the **SEARCH/AUDIO ON** button to save the settings.

Clock setting

Example: To set the clock to October 15, 2001 at 3:20 PM (15:20).

- ❶ Press the **MENU** button to display the (SET UP 1) menu.
- ❷ Press the ▼ (or ▲) button to set the auto daylight saving time/standard time adjustment.
 - NO USE No daylight saving time/standard time adjustment is made.
 - USE The auto daylight saving time/standard time adjustment is made.
- ❸ Press the → button until “1ST” of the “ON” line is flashing.
- ❹ Set the day the daylight saving time adjustment is made.
 - Press the ▼ (or ▲) button to set the week, then press the → button.
1ST, 2ND, 3RD, 4TH or LST (first, second, third, fourth or last)
 - Press the ▼ (or ▲) button to set the day of week, then press the → button.
SUN, MON, TUE, ... SAT (Sunday, Monday, Tuesday....Saturday)

- ❺ Press the ▼ (or ▲) button to set the month the daylight saving time adjustment is made, then press the → button.
01, 02,.....11, 12 (for January, February.....November, December)
- ❻ Press the ▼ (or ▲) button to set the time the daylight saving time adjustment is made.
- ❼ Press the → button until “LST” of the “OFF” line is flashing.
- ❽ Following the same procedure as above (steps ❹ to ❻), set when the time is changed back from daylight saving time to standard time.
- ❾ Press the → button, until the “CLOCK SET” setting is flashing.
- ❿ Press the ▼ (or ▲) button to set the month (ex: 10), then press the → button.
 - *The day of week is set automatically.*
- ⓫ Press the ▼ (or ▲) button to set the day (ex: 15), then press the → button.
- ⓬ Press the ▼ (or ▲) button to set the year (ex: 01 for 2001), then press the → button.
 - *The last 2 digits only are displayed.*
- ⓭ Press the ▼ (or ▲) button to set the hours (ex: 15 for 3 PM), then press the → button.
- ⓮ Press the ▼ (or ▲) button to set the minutes (ex: 20), then press the → button.

```

<SET UP 1>
*DAYLIGHT SET USE
  WEEK MONTH TIME
ON 1ST-SUN 04 02:00
OFF LST-SUN 10 02:00

*CLOCK SET
10-15-01 MON 15:20:00
*REMOTE EJECT
*LANGUAGE-LANGUE-IDIOMA
ENGLISH
    
```

- ⓯ For accurate clock setting, press the ▼ button together with a time broadcast, or other accurate time signal, this will start the seconds counting from 00.
- ⓰ Press **SEARCH/AUDIO ON** button.
 - *The setting procedure is now completed.*

NOTES:

- Clock display is only 24 hours.
- In STOP mode, press and hold the **STOP** button then press the **TRACKING/V.STILL-** button to reset the minutes and seconds to 00 (to the closest hour). For example, between 13:30:00 and 14:29:59 the clock is reset to 14:00:00.
- If a cassette tape is not loaded, you can reset the seconds to “00” by pressing the **COUNTER RESET** button.

CHANGING THE ON-SCREEN DISPLAY

Selecting the On-screen Display

You can select to display or not the date, time, the number of alarm recordings and tape speed.

- 1 Turn the power on to all devices used.
- 2 Press the **MENU** button until the (SET UP 2) menu is displayed.

<SET UP 2>	
*DISPLAY	
DATE	Y
TIME	Y
ALARM COUNT	Y
SPEED	Y
*BUZZER	
ALARM IN	Y
TAPE END	Y
KEY IN	N
WARNING	Y

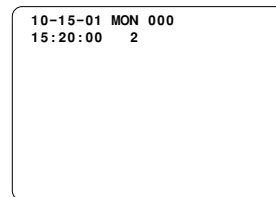
- 3 Press the **→** button, until the desired item for which the display function will be set is flashing.
- 4 Press the **▼** (or **▲**) button to set "Y" for the functions described below.
 - DATE The date is displayed
 - TIME The time is displayed
 - ALARM COUNT. . . . The number of alarm recordings is displayed
 - SPEED. The recording/playback speed mode is displayed
- 5 Press the **SEARCH/AUDIO ON** button to save the settings.

NOTE:

- If the **ON SCREEN** switch is set to the "ON" position, the items for which "Y" is set are recorded. The items for which "N" was set at step 4 above are not recorded.

Changing the Date/Time Display Position

- 1 Turn the power on to all input devices to the VCR.
- 2 Set the **ON SCREEN** switch to the "ON" position.
 - The date and time are displayed.



- 3 Press the **SHIFT →** (or **↓**) button.
 - The display will move towards the right (or the bottom).

NOTES:

- If the **SHIFT →** (or **↓**) button is kept pressed for 1 second or more the display will move at a faster speed.
- The display position cannot be changed while recording.

VIDEO CASSETTE TAPES

Use only video cassette tapes bearing the **VHS** logo. This VCR was primarily designed for use with T-120 cassette tapes, it is recommended to use T-120 standard grade VHS video cassette tapes for optimal performance.

Handling Cassette Tapes

The cassette tapes should always be stored vertically, in their cases, away from high temperatures, magnetic fields, direct sunlight, dirt, dust and locations subject to mold formation.

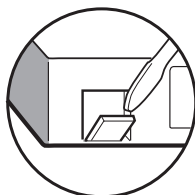
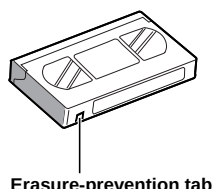
Do not tamper with the cassette mechanism and never touch the tape with your fingers.

Protect the cassette tapes from shocks or strong vibrations.

To Protect your Recordings

After having recorded a tape, if you wish to keep the recording, use a flathead screwdriver to break off the erasure-prevention tab on the cassette.

To record again on a tape without erasure-prevention tab, cover the hole with adhesive tape.

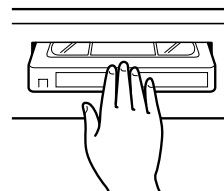


Precautions concerning the video cassette tapes

- Do not use tapes that are damaged, tapes that have been cut and repaired or tapes that have been altered in any way.
- Some rewinders may entangle the tape, and therefore their use is not recommended.
- When tapes are recorded over and over again, the recording quality will deteriorate. Refer to "Concerning the Number of Times Tapes can be Rerecorded on" on page 17, and replace the tape with a new tape as required.

Loading

- ❶ Place the cassette, label side up, in the loading slot. Gently push the center of the cassette until it is loaded automatically.



- The time display will switch to the reset counter "0_H 00_M 00_S" display.
- After the cassette tape is loaded, a mechanism will operate for about 12 seconds to check that the tape has been threaded correctly and the cassette indicator "●●" will blink during that period.
- When the cassette is loaded, if the tape has been threaded correctly, the cassette indicator "●●" will light on the digital display.

NOTE:

- If you try to record on a cassette without erasure-prevention tab, the VCR will eject the cassette.

Unloading

- ❶ In stop mode, press the **EJECT** button.
 - The cassette is automatically ejected.

NOTES:

- Do not insert any object in the cassette loading slot, as that may cause injury and damages to the VCR.
- If your hand gets stuck in the cassette loading slot, unplug the power cord and consult the dealer where the unit was bought. Do not forcibly pull the hand out as that may cause severe injuries.

VIDEO CASSETTE TAPES

Correct tape thread check function

If the correct tape thread check function is on, after the cassette tape is loaded, a mechanism will operate for about 12 seconds to check that the tape has been threaded (loaded) correctly and the cassette indicator “●●” will blink during that period. If the tape is not loaded properly, the cassette will be ejected.

NOTES:

- This function checks to make sure that the cassette has been correctly loaded. It is recommended to use this function to make sure the recordings are conducted reliably.
- If during the tape thread check operation, the **REC**, **PLAY**, **FF**, **REW** or **STOP** button is pressed, the command will only be executed after the tape thread has been checked. Only the **EJECT** button will operate while the tape thread is being checked.
- If in the (SET UP 3) menu “TAPE IN MODE” is set to “REC”, the recording indicator “○” will light during the while the tape thread is checked. However, recording will only start after the tape thread check is completed. To cancel recording, press the **STOP** button.

- 1 Press the **MENU** button until the (SET UP 4) menu is displayed.

<SET UP 4>	
*SW OUT	
FIELD	01
TIMING	FIELD
2H	Y
*THREAD CHECK	Y
*VIDEO LOSS	N
*REC SPEED	N

- 2 Press the → (or ←) button, until the “THREAD CHECK” setting is flashing.
- 3 Press the ▼ (or ▲) button to set the desired mode.
 - Y The correct tape thread check function is on
 - N The correct tape thread check function is off
- 4 Press the **SEARCH/AUDIO ON** button to save the setting.

Setting the Action to Take When a Cassette is Loaded

In the (SET UP 3) menu, you can set the mode the VCR will go into when a cassette is loaded.

- 1 Press the **MENU** button until the (SET UP 3) menu is displayed.

<SET UP 3>	
*ALARM MODE	Y1
*ALARM DURATION	20S
*TAPE IN MODE	STOP
*TAPE END MODE	REW
*TAPE END OUT	-3M
*CLOG DETECT.	Y

- 2 Press the → (or ←) button, until the “TAPE IN MODE” setting is flashing.
- 3 Press the ▼ (or ▲) button to set the desired mode.
 - STOP Stays in stop mode
 - REC Goes into recording mode
- 4 Press the **SEARCH/AUDIO ON** button to save the setting.

TAPE MANAGEMENT FUNCTION

This VCR is equipped with a tape management function. Using this function you can protect previous recordings and prevent overuse of the tape by controlling the tape protection term (number of days), the maximum number of re-recordings of the tape and the recording group. To use the tape management function, it must be set before recording is started. The tape management data is recorded at the beginning of the tape. For details on how to set this function, refer to "Setting the Tape Management Function".

PROTECT DAY: To set the number of days before the tape can be rerecorded over.

REC PASS SET: To limit the number of rerecordings, in order to maintain a good image quality.

GROUP NO.: To manage tapes belonging to different recording groups.

NOTE:

- Before using this function, make sure that the clock is set properly.

Operation

When recording is started, the VCR will rewind the tape to the beginning, and will playback some of the tape to check for the presence of tape management data (no image is displayed). While the presence and type of data are checked, the message "T. MANAGE. CHK" is displayed on-screen.

NOTES:

- When a program timer recording is set, the tape management data is checked after the **TIMER** button is pressed to complete the program timer recording setting.
- During alarm recording, the tape management function will not operate even if it is active.

If no tape management data is present on the tape

Recording will start according to the settings in the (TAPE MANAGEMENT) menu.

When recording starts, the updated tape management data is recorded onto the tape.

If the tape has already been recorded on, the message "USED TAPE" will flash on-screen until recording starts.

If tape management data is present on the tape

The tape management data is checked and if there is no conflict, the VCR will rewind the tape to the beginning, then recording starts and the updated tape management data is recorded onto the tape. While the tape is rewound and the tape management data recorded, the message "T. MANAGE. OK" is displayed on-screen.

If a conflict is found when the tape management data is checked, the (TAPE MANAGEMENT) menu is displayed and the conflicting setting will flash. This menu will show the settings taken from the data recorded on the tape and not the current data settings held in the VCR's (TAPE MANAGEMENT) menu setting. Refer to "Tape Management Conflict Display" for detailed information.

NOTES:

- During Autorepeat recording, the tape management data at the beginning of the tape will be checked and updated every time the tape is rewound to the beginning. However, the "PROTECT DAY" setting will be ignored. Also, even if there is a conflict with the "REC PASS SET" number, autorepeat recording will continue without any warning.
- If the VCR is set for alarm recordings, alarm recording will be done based on the different settings.

If an alarm trigger is received while the tape is being first rewind, the tape will continue to be rewound to the beginning, then alarm recording will be done after the tape has been advanced of a preset duration.

If an alarm trigger is received while the message "T. MANAGE. CHK" is displayed on-screen, in order to prevent erasing the tape management data recorded at the beginning of the tape, the tape is advanced of a preset duration, then alarm recording starts.

If an alarm trigger is received while tape management data is being recorded onto the tape, alarm recording will only start after all the data has been recorded.

Furthermore, when setting a program timer recording, in order to protect the data, no alarm trigger will be received until the first program timer recording starts.

IMPORTANT NOTES:

- If the tape management data cannot be read, the VCR will switch to stop mode and "INCORRECT DATA" will be displayed on-screen. This may indicate that the beginning of the tape (data recording/reading section) is damaged and the tape may be unusable. The message "INCORRECT DATA" will disappear when the **EJECT**, **STOP** or **PLAY** button is pressed.
- **Set the security lock function to on in order to protect the security of this feature.**

TAPE MANAGEMENT FUNCTION

Setting the Tape Management Function

- 1 Press the **MENU** button until the (TAPE MANAGEMENT) menu is displayed.

<TAPE MANAGEMENT>	
*TAPE MANAGE.	N
*PROTECT DAY	30
*REC PASS SET	10
*GROUP NO.	OFF
*OVERRIDE	N

- 2 Press the ▼ (or ▲) button to select the desired mode.
 N The tape management function is not active.
 Y The tape management function is active.

When setting to "Y", please continue with the settings below.

- 3 Press the ➡ button, until the "PROTECT DAY" setting is flashing.
- 4 Press the ▼ (or ▲) button to select the desired number of days to protect the tape.
 OFF The tape is not protected.
 1-255 . . . Number of days to protect the tape (prevent over-recording), from the date of the last recording on the tape (or the last expected recording date (calculated using the tape length (T-120) and the recording speed).

NOTES:

- Since the last expected recording date is a calculated date (using the tape length (T-120) and the recording speed), it may be different from the actual last recording date, this due to other settings such as (alarm recordings, program timer recordings, holiday settings).
 - When setting a program timer recording, the tape protection term is checked when the VCR is set to program timer recording stand-by mode.
 - When a program timer recording is done, the data is updated when recording starts. Even if the recording is stopped before the programmed time, the original data (last expected recording date) will remain as calculated.
- 5 Press the ➡ button, until the "REC PASS SET" setting is flashing.
 - 6 Press the ▼ (or ▲) button, to select the desired number of re-recording times.
 OFF The number of re-recording times will not be checked.
 1-100 . . . Maximum number of re-recording times.
 (Refer to "Concerning the Number of Times Tapes can be Rerecorded on" on page 17.)

NOTES:

- The data is updated at the beginning of the recording. Even if the recording is stopped before the end, the original data information will be considered.
 - During Autorepeat recording, the re-recording times count will be updated every time the tape is rewound to the beginning. Autorepeat recording will proceed even if the count exceeds the "REC PASS SET" setting. If in the BUZZER section WARNING is set to "Y", the buzzer is heard.
- 7 Press the ➡ button, until the "GROUP NO." setting is flashing.
 - 8 Press the ▼ (or ▲) button, to select the desired group number.
 OFF The group number will not be checked.
 1-15 Group number setting.
 - 9 Press the ➡ button, until the "OVERRIDE" setting is flashing.
 - 10 Press the ▼ (or ▲) button, to select the desired override mode.
 Y In case of a conflict that prevents recording, the next operation is executed. If recording is done, then the last recording date and the re-recording times count are updated.
 N In case of a conflict that prevents recording, the (TAPE MANAGEMENT) menu is displayed and the conflicting setting preventing recording will flash. The only possible action is to press the **EJECT** button, in order to eject the tape. (Refer to "Tape Management Conflict Display".)
 - 11 Press the **SEARCH/AUDIO ON** button to save the settings.

NOTES:

- **Once the tape management data is recorded on tape, it cannot be changed.**
- The criteria (condition) for allowing recording will be based on the data recorded on the tape and not the settings in the (TAPE MANAGEMENT) menu.

TAPE MANAGEMENT FUNCTION

Tape Management Conflict Display

If when the tape management function checks the tape data a conflict that prevents recording is found, the (TAPE MANAGEMENT) menu is displayed with the conflicting setting flashing and the VCR go into the stop mode. If in the (SET UP 2) menu, in the BUZZER section WARNING is set to "Y", the buzzer is heard. (To stop the buzzer, press the **STOP** button.)

NOTES:

- If "OVERRIDE" is set to "N" (No), the conflicting setting is displayed flashing and the message (PRESS EJECT) is displayed at the bottom of the screen. Recording under these conditions is not possible. Press the **EJECT** button to eject the tape. To record on the same tape, set the OVERRIDE setting to "Y" and modify the conflicting setting, then insert the same tape and press the **REC** button. However, if only "PROTECT DAY" and "REC PASS SET" are modified, the menu will be displayed again. Press the **REC** button one more time to start recording. Recording starts and the tape data is updated.

Conflict display sample

<TAPE MANAGEMENT>		
*TAPE MANAGE.	N	
*PROTECT DAY	30	
LAST M/D	NEXT M/D	
10/15	11/15	
*REC PASS SET	10	
PASS COUNT	10	
*GROUP NO.	7	
REC GR.NO.	8	
*OVERRIDE	N	
(PRESS EJECT)		

- If the "OVERRIDE" is set to "Y" (Yes), the (TAPE MANAGEMENT) menu is displayed and conflicting setting preventing recording will flash and VCR go into the stop mode.
To enter the record mode, press the **REC** button.

PROTECT DAY CONFLICT

The tape is protected, the tape protection term (ex. 30 days) is not yet over.

Under LAST M/D, the date of the last recording on the tape (or the last expected recording date (calculated using the tape length (T-120) and the recording speed)) is displayed.

Under NEXT M/D, the date when it will be possible to record on the tape again is displayed.

REC PASS SET CONFLICT

The set number of recording passes has been reached.

The PASS COUNT shows the number of recording passes on the tape (ex. since the maximum number of recording passes is set to "10", this prevents further recording.)

NOTES:

- When conducting Autorepeat recording, if the PASS COUNT exceeds 100, "101★" will be displayed flashing.
- If using a tape recorded previously on a different type of VCR (no tape data), when the set number of recordings is exceeded, "USED" will flash next to the PASS COUNT number.

GROUP NO. CONFLICT

The group numbers do not match.

The REC GR. NO. shows the tape recording group number (ex. this tape belongs to a different recording group number 8 than the one set 7.)

NORMAL RECORDING

Normal Recording

Before starting

- Turn the power on to all devices used.
- Load a cassette tape with erasure-prevention tab.

NOTE:

- If in the (SET UP 3) menu, TAPE IN MODE is set to "REC", recording will start after the tape thread has been checked.
- Set the **ON SCREEN** switch to the "ON" position.

- 1 Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the recording speed mode.
 - The recording speed mode is displayed on-screen and on the digital display.
- 2 Press the **REC** button.
 - The record indicator "○" light.
 - Recording starts.
 - If the tape end is reached while recording, "OFF" is displayed on the digital display and the unit goes into the mode set at the "TAPE END MODE" line in the (SET UP 3) menu.

NOTES:

- If in the (SET UP 2) menu, in the BUZZER section TAPE END is set to "Y", the buzzer will be heard as long as "OFF" is displayed on the digital display.
 - To cancel the "OFF" display, press the **STOP**, **EJECT**, **FF**, **REW** or **PLAY** button.
- 3 To stop recording, press the **STOP** button.

NOTES:

- A tape recording made on this VCR may not play back with the same degree of clarity on a time lapse from another manufacturer.
- If you press on the **REC** button and the loaded cassette has no erasure-prevention tab, the VCR will eject the cassette.

[Recording Speed Mode]

Recording speed mode (hour mode)	Maximum recording duration (hours)	Recording interval (second)	Audio recording	Tape motion
2	2	1/60	Possible	Continuous
12	14	7/60		
24	26	13/60		
48	50	25/60	Not possible	Intermittent
72	74	37/60		

Record Pause

Recording can be interrupted temporarily.

- 1 Press the **STILL/PAUSE** button during recording.
 - The Pause/Still indicator "⏸" blinks.

NOTES:

- The image appears on-screen but it is not recorded.
 - If a recording pause continues for 5 minutes or more, the VCR will go into stop mode to avoid damaging the tape.
- 2 To resume recording, press the **REC** button, or press the **STILL/PAUSE** button again.

NORMAL RECORDING

Concerning the Number of Times Tapes can be Rerecorded on

Depending on the recording speed mode, the tape must be replaced after a certain number of recording times.

Refer to the table below for the maximum number of times a tape can be recorded on.

Recording speed mode (hour mode)	Maximum number of recording times (with a standard grade tape)
2	100
12	50
24	50
48	25
72	15

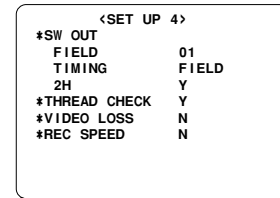
NOTES:

- The maximum number of recording times will vary depending on the location and kind of tape used. Verify the recording quality and replace the tape when the quality starts to deteriorate.
The maximum number of recording times indicated above are based on test tapes (T-120) used by the company.
- If using longer tapes (i.e. T-160) the tape travel will not be as stable and that may cause problems.

Changes to the Recording Speed Mode During Recording

It is possible to permit or prevent changing the recording speed mode during recording.

- Press the **MENU** button until the (SET UP 4) menu is displayed.



- Press the → (or ←) button, until the “REC SPEED” setting is flashing.
- Press the ▼ (or ▲) button to set the desired mode.
Y Recording speed mode can be changed
N Recording speed mode can not be changed
- Press the **SEARCH/AUDIO ON** button to save the setting.

Action to Take when the Video Signal Deteriorates

If there is no video signal during recording or when a menu is not displayed (in stop, fast forward or rewind modes), “VIDEO LOSS” can be displayed on-screen and a signal (0 V) can be output at the **ALARM OUT** terminal. If in the (SET UP 2) menu, in the BUZZER section WARNING is set to “Y”, the buzzer will be heard. To stop the buzzer, press the **STOP** button.

- Press the **MENU** button until the (SET UP 4) menu is displayed.
- Press the → (or ←) button, until the “VIDEO LOSS” setting is flashing.
- Press the ▼ (or ▲) button to set the desired mode.
N The video loss warning is not active.
Y The video loss warning is active.
- Press the **SEARCH/AUDIO ON** button to save the setting.

NORMAL RECORDING

Recording Check

The image being recorded can be checked.

- ❶ During recording, press the **PLAY (REC CHECK)** button.
 - *The tape will be rewound and then played back.
The VCR will then return to the previous recording mode.*

NOTE:

- During recording check operations, recording is suspended momentarily.

Clog Detection

This VCR is equipped with a clog detection function.

The recording quality is monitored automatically. When the heads are dirty and the recording quality deteriorates, the output at the **WARNING OUT** terminal becomes 0V (Low), the “○” indicator flashes on the digital display, and the buzzer sounds.

If in the (SET UP 3) menu, CLOG DETECT. is set to “N”, the recording quality is not monitored.

NOTES:

- To cancel the “○” indicator display and reset the

AUTOREPEAT RECORDING

Autorepeat Recording

The same tape can be recorded over many times.

- Follow the **Before starting** steps, under “NORMAL RECORDING”.

- ➊ Set the **REPEAT REC** switch to the “ON” position.
 - The *REPEAT* indicator will light.
- ➋ Press the **MENU** button until the (SET UP 3) menu is displayed.
 - The “ALARM MODE” setting is flashing.

<SET UP 3>	
*ALARM MODE	Y1
*ALARM DURATION	20S
*TAPE IN MODE	STOP
*TAPE END MODE	R1
*TAPE END OUT	-3M
*CLOG DETECT.	Y

- ➌ Press the → (or ←) button, until the “TAPE END MODE” setting is flashing.
- ➍ Press the ▼ (or ▲) button to set to “R 1” or “R 2”.
(Please refer to page 18, “Setting the Mode at the End of the Tape.”)
- ➎ Press the **SEARCH/AUDIO ON** button to save the setting.
- ➏ Press the **REC/PLAY SPEED ▼** (or ▲) button to set the recording speed mode.
- ➐ Press the **REC** button.
 - Recording will start. When the tape end is reached, the VCR will rewind it to the beginning, and recording will resume.
 - When the end of the tape is reached, a buzzer will be heard (if in the (SETUP 2) menu, in the BUZZER section TAPE END is set to “Y”) and “OFF” will be displayed until the rewinding operation starts.

NOTES:

- If during autorepeat recording there is an alarm trigger, “AL” is displayed on the digital display and alarm recording will take place. (Please refer to page 20, “ALARM RECORDING”.)
- If the “TAPE END MODE” setting is R 1, the REPEAT indicator will go off if there is an alarm trigger. After alarm recording, the recording will continue to the end of the tape then it will be rewound to the beginning and stop. “OFF” will be displayed on the digital display. To turn off the buzzer (if in the (SETUP 2) menu, in the BUZZER section TAPE END is set to “Y”) and the “OFF” display, press the **STOP, EJECT, FF, REW** or **PLAY** button.
- If “AL” is displayed on the digital display and the “TAPE END MODE” setting is R1, autorepeat recording is not possible.

ALARM RECORDING

By connecting the **ALARM IN** terminal to a door switch, an interphone, etc., a recording can be done only when necessary.

Alarm Recording Setting

Alarm recording is performed when there is an input (trigger) at the **ALARM IN** terminal, "AL" is displayed on the digital display.

- Make all necessary connections.
- The alarm triggers are received while in recording and stop modes.
- Follow the **Before starting** steps, under "NORMAL RECORDING".

- 1 Set the **ALARM SPEED** switch to the desired recording speed.
2H 2-hour mode recording
12H 12-hour mode recording
NC Recording at the speed already set
- 2 Set the **ALARM DURATION** switch to the desired recording duration.
20S. 20-second recording
PROG. Recording for the duration set for the "ALARM DURATION" item in the (SET UP 3) menu.
CC Recording as long as the alarm signal is being input (minimum 5 seconds)
- 3 Press the **MENU** button until the (SET UP 3) menu is displayed.

<SET UP 3>	
*ALARM MODE	Y1
*ALARM DURATION	20S
*TAPE IN MODE	STOP
*TAPE END MODE	REW
*TAPE END OUT	~3M
*CLOG DETECT.	Y

- 4 Press the ▼ (or ▲) button to set the desired alarm mode.
Y1. Alarm recording is done when there is an alarm trigger.
Y2. Alarm recording is done only when there is an alarm trigger during programmed timer recording.
Y3. Alarm recording is done only if there is an alarm trigger and the VCR is not in programmed timer recording mode.
Y4. Alarm recording is done only when there is an alarm trigger during programmed timer recording duration. Timer recording is not possible.
N Alarm recording is not performed even if there is an alarm trigger.

If the **ALARM DURATION** switch is set to the "PROG." position, please continue with steps 5 and 6.

- 5 Press the → button, until the "ALARM DURATION" setting is flashing.
- 6 Press the ▼ (or ▲) button, to select the desired alarm recording duration (20S, 40S, 1M, 2M, 3M, 4M, 5M, or CC).
20S-5M. . . Recording only for the displayed duration
CC Recording as long as the alarm signal is being input (minimum 5 seconds)
- 7 Press the **SEARCH/AUDIO ON** button to save the settings.

NOTES:

- During alarm recording all buttons are disabled.
- If "OFF" is displayed on the digital display, alarm recording is not possible in order to prevent the recorded tape to be recorded over.
To cancel the "OFF" display, press the **STOP**, **EJECT**, **FF**, **REW** or **PLAY** button.
- If an alarm trigger is received while alarm recording is in progress, recording duration for the second alarm will be calculated from that point. The alarm counter will register the alarm, but it will not be found during an alarm scan and alarm search.
- If there is a power failure during alarm recording, and the power is restored within the recording set duration, alarm recording will continue.
- If the alarm recording duration is short, the alarms may not be found during an alarm scan or an alarm search. If the alarms are going to be reviewed using alarm scan or alarm search, then in 2-hour mode, 20-second or more recording duration should be used.

ALARM RECORDING

Alarm Recording Counter Display

- During alarm recording, “AL” will be flashing on the digital display.
- If the **ON SCREEN** switch is set to the “ON” position, the number of alarms will flash on the monitor screen.
- The maximum display number of alarm recordings is “999”, at the next alarm recording the counter will indicate “000”.
- When the (ALARM TIME) menu is displayed, press the **MENU RESET** button to reset the alarm counter to “000” (all the data of the (ALARM TIME) menu is reset).

Connections to the ALARM IN/OUT Terminals

- Alarm input signal
Connect a make-contact (no voltage) switch between the **ALARM IN** and **COM** terminals.
- Alarm output signal
Normally DC 5V are output between the **ALARM OUT** and the **COM** terminals. When an alarm input (trigger) is received and the unit is recording, the output falls to 0V. Once the alarm recording is over, the output returns to DC 5V.

Checking the Alarm Recordings Time

- ① Press the **MENU** button until the (ALARM TIME) menu is displayed.
 - *The number of alarm recordings, and the 8 most recent alarm recording times are displayed.*

<ALARM TIME>		
008	12-25	19:00
	11-25	23:00
	11-25	15:00
	10-25	08:00
	10-25	06:00
	09-25	20:00
	09-25	16:35
	09-25	10:52

NOTE:

- The data for the previous alarm recordings is erased.
- ② Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.

NOTE:

- If the **MENU RESET** button is pressed while the (ALARM TIME) menu is displayed, the displayed data is erased. “AL” will be erased from the digital display.

ALARM RECORDING

Alarm Scan

To look for an alarm recording by viewing the first 5 seconds of each alarm recording.

- ❶ Press the **SEARCH/AUDIO ON** button twice during stop mode.
 - “AL SCAN” will be displayed on screen.
- ❷ Press the **FF** (or **REW**) button.
 - The unit will advance (or rewind) the tape at high speed and playback the first 5 seconds of every alarm recording.
 - To cancel the alarm scan mode, press the **STOP** button.
- ❸ While the desired recording is being played back, press the **PLAY** button.
 - Playback will start, alarm scan mode is cancelled.

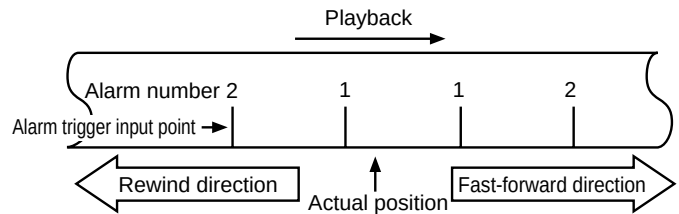
Alarm Search

To go to the beginning of a desired alarm recording.

- ❶ Press the **SEARCH/AUDIO ON** button during stop mode.
 - “AL SEARCH 01” will be displayed on screen.
- ❷ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the desired alarm number (1 to 99), then press the **FF** (or **REW**) button.
 - The desired alarm is searched and a still image of the beginning of the alarm recording will appear on-screen.

NOTE:

- The alarm number is relative to the actual tape position. (Please refer to the illustration below.)



- ❸ Press the **PLAY** button.
 - Playback will start.

PROGRAM TIMER RECORDING

There are two program timer recording methods, daily recording or recording on certain days of the week.

Example 1: To record on every Saturday from 9:00 AM to 5:00 PM (17:00), in 24-hour mode (recording speed).

- Follow the **Before starting** steps, under "NORMAL RECORDING".
- Press the **MENU** button until the (TIMER SET) menu is displayed.
 - "SUN" (Sunday) will be flashing.

<TIMER SET>			
WEEK	START	STOP	SPD
SUN	--:--	--:--	--- N
MON	--:--	--:--	--- N
TUE	--:--	--:--	--- N
WED	--:--	--:--	--- N
THU	--:--	--:--	--- N
FRI	--:--	--:--	--- N
SAT	--:--	--:--	--- N
DLY	--:--	--:--	--- N
EXT	*****	*****	--- N

- Press the **→** (or **←**) button, until "SAT" (Saturday) is flashing.
- Press the **→** button.
 - The recording start hour position starts flashing.
- Press the **▼** (or **▲**) button to set the recording start hour (ex: 09), then press the **→** button.
 - The recording start minutes position starts flashing.
- Press the **▼** (or **▲**) button to set the recording start minutes (ex: 00), then press the **→** button.
 - The recording stop hour position starts flashing.
- Press the **▼** (or **▲**) button to set the recording stop hour (ex: 17), then press the **→** button.
 - The recording stop minutes position starts flashing.

- Press the **▼** (or **▲**) button to set the recording stop minutes (ex: 00), then press the **→** button.
 - The "SPD" (recording speed) position will start flashing.

NOTE:

- If the set stop time is earlier than or the same time as the set start time, the VCR will consider the stop time to be the following day, and "T" will be displayed next to the recording stop time.
- Press the **▼** (or **▲**) button to select the recording speed mode (ex: 24), then press the **→** button.
 - "N" will start flashing.
 - Press the **▼** (or **▲**) button to select the desired program timer recording mode.

Y recording will take place

N recording will not take place

<TIMER SET>			
WEEK	START	STOP	SPD
SUN	--:--	--:--	--- N
MON	--:--	--:--	--- N
TUE	--:--	--:--	--- N
WED	--:--	--:--	--- N
THU	--:--	--:--	--- N
FRI	--:--	--:--	--- N
SAT	09:00	17:00	24 Y
DLY	--:--	--:--	--- N
EXT	*****	*****	--- N

- Repeat steps 2 to 9 to program timer recordings for other days of the week.
- Press the **SEARCH/AUDIO ON** button to save the settings.
 - Press the **TIMER** button.
 - The timer recording indicator "□" will light on the digital display, the VCR is now in timer recording stand-by mode.

NOTES:

- To modify, cancel or stop timer recording, press the **TIMER** button to cancel the timer recording mode.
- To record everyday at the same time, at step 2 select the "DLY" line.

PROGRAM TIMER RECORDING

A timer recording of more than 24 hours can only be set on the 7th (SAT) and 8th (DLY) lines of the (TIMER SET) menu.

Example 2: To record every week from Saturday at 9:00 PM (21:00) to Monday at 7:00 AM, in 48-hour mode (recording speed).

- Follow the **Before starting** steps, under “NORMAL RECORDING”.
- ❶ Press the **MENU** button until the (TIMER SET) menu is displayed.
 - “SUN” (Sunday) will be flashing.
- ❷ Press the **→** (or **←**) button, until “SAT” is flashing.
- ❸ Press the **▼** (or **▲**) button to set the desired start day of the week (ex: SAT), then press the **→** button.
 - *The recording start hour position starts flashing.*
- ❹ Press the **▼** (or **▲**) button to set the recording start hour (ex: 21), then press the **→** button.
 - *The recording start minutes position starts flashing.*
- ❺ Press the **▼** (or **▲**) button to set the recording start minutes (ex: 00), then press the **→** button.
 - *The recording stop hour position starts flashing.*
- ❻ Press the **▼** (or **▲**) button to set “**” for the recording stop hour.
 - *The rest of the line settings will change to “**:** ** **, the day of the next line will change to the next day and the start time will change to “**:**” automatically.
- ❼ Press the **→** button.
 - *The day of the week of the 8th line is flashing.*

- ❽ Press the **▼** (or **▲**) button to set the desired stop day of the week (ex: MON), then press the **→** button.
 - *The recording stop hour position starts flashing.*
- ❾ Press the **▼** (or **▲**) button to set the recording stop hour (ex: 07), then press the **→** button.
 - *The recording stop minutes position starts flashing.*
- ❿ Press the **▼** (or **▲**) button to set the recording stop minutes (ex: 00), then press the **→** button.
 - *The “SPD” (recording speed) position will start flashing.*
- ⓫ Press the **▼** (or **▲**) button to select the recording speed mode (ex: 48), then press the **→** button.
 - *“N” will start flashing.*
- ⓬ Press the **▼** (or **▲**) button to select “Y”.

<TIMER SET>			
WEEK	START	STOP	SPD
SUN	--:--	--:--	--- N
MON	--:--	--:--	--- N
TUE	--:--	--:--	--- N
WED	--:--	--:--	--- N
THU	--:--	--:--	--- N
FRI	--:--	--:--	--- N
SAT	21:00	**:**	*** *
MON	**:**	07:00	48 Y
EXT	*****	*****	--- N

- ⓭ Follow steps ❿ and ⓫ under “PROGRAM TIMER RECORDING” on page 23.

PROGRAM TIMER RECORDING

Setting the Holidays

By setting the holidays, timer recording will be conducted on those days, as set for Sundays.

- 1 Press the **MENU** button until the (HOLIDAY SET) menu is displayed.

<HOLIDAY SET>			
1	----	11	----
2	----	12	----
3	----	13	----
4	----	14	----
5	----	15	----
6	----	16	----
7	----	17	----
8	----	18	----
9	----	19	----
10	----	20	----

- 2 Press the ▼ (or ▲) button to set the month of the holiday, then press the → button.
- 3 Press the ▼ (or ▲) button to set the day of the holiday.
- 4 Press the → button.
 - Repeat steps 2 to 4 to set up to 20 holidays.
- 5 Press the **SEARCH/AUDIO ON** button to save the settings.

NOTE:

- If setting holidays, be sure that a timer recording is set for Sunday. If not, this function will not operate.
- If a timer recording for Sundays is entered, the holidays timer recording will not function if the program timer recording mode is set to "N".
- To erase a setting, follow the same procedure as above, but at step 2 and 3, enter "--" instead of a setting.

Changing a Program Timer Recording

- 1 Press the **MENU** button until the (TIMER SET) menu is displayed.
- 2 Press the → (or ←) button until the setting to correct is flashing.
- 3 Press the ▼ (or ▲) button to correct the setting.
- 4 Press the **SEARCH/AUDIO ON** button to save the settings.
- 5 Press the **TIMER** button.

To Cancel a Program Timer Recording

- 1 Press the **MENU** button until the (TIMER SET) menu is displayed.
- 2 Press the → (or ←) button until the "Y" corresponding to the timer recording to cancel is flashing.
- 3 Press the ▼ (or ▲) button to select "N".
- 4 Press the **SEARCH/AUDIO ON** button to save the settings.
- 5 Press the **TIMER** button.

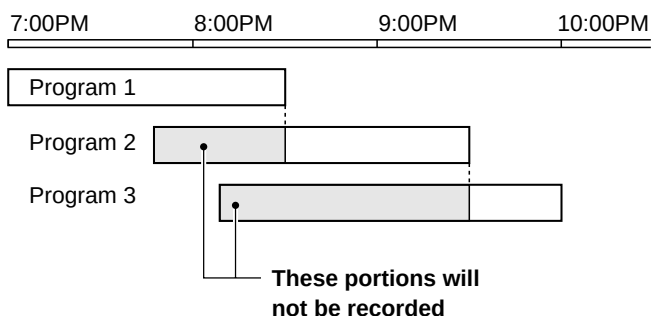
To Cancel all Program Timer Recordings

- 1 Press the **MENU** button until the (TIMER SET) menu is displayed.
- 2 Press the **MENU RESET** button.
 - All programmed timer recordings are erased.
- 3 Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.

PROGRAM TIMER RECORDING

NOTES:

- During timer recording or timer recording stand-by, all the buttons on the VCR, except the **TIMER** button and the buttons to set/cancel the security lock (see page 31), are disabled.
- If the power fails, the recording will be interrupted. When the power is restored, the recording will resume if the stop time has not yet been reached, and "P" will be displayed on the digital display. The VCR internal battery is completely recharged after the VCR has been connected to a live outlet for 48 hours, and it will maintain all the VCR settings memory for up to 30 days.
- Set the timer recordings so that the recording times do not overlap. If they do, the one with the earliest recording start time will have priority. (See chart below.)



- To set two or more timer recordings for a same day of the week, press the ➡ (or ⬅) button, until the day of the week for the second recording is flashing, then press the ▼ (or ▲) button, to set the desired day of the week.
- If no timer recording is set or a cassette without erasure-prevention tab is loaded, when the **TIMER** button is pressed the timer recording indicator "□" will start flashing and a buzzer will be heard.
- If "OFF" is displayed on the digital display, timer recording is not possible in order to prevent the recorded tape to be recorded over.

RECORDING USING AN EXTERNAL TIMER INPUT

Recording can be controlled by an external start/stop signal input at the **EXT TIMER IN** terminal.

Example 3: To record using the signal input at the **EXT TIMER IN** terminal, in 24-hour mode.

- Follow the **Before starting** steps, under “NORMAL RECORDING”.

NOTE:

- External timer input recording can only be set on the 9th line (EXT) of the (TIMER SET) menu.
- Press the **MENU** button until the (TIMER SET) menu is displayed.
 - Press the **→** (or **←**) button, until the “SPD” (recording speed) position of the “EXT” line starts flashing.
 - Press the **▼** (or **▲**) button to select the recording speed mode (ex: 24), then press the **→** button.
 - “N” will start flashing.
 - Press the **▼** (or **▲**) button to select “Y”.

<TIMER SET>			
WEEK	START	STOP	SPD
SUN	--:--	--:--	--- N
MON	--:--	--:--	--- N
TUE	--:--	--:--	--- N
WED	--:--	--:--	--- N
THU	--:--	--:--	--- N
FRI	--:--	--:--	--- N
SAT	--:--	--:--	--- N
DLY	--:--	--:--	--- N
EXT	*****	*****	24 Y

- Follow steps ⑩ and ⑪ under “PROGRAM TIMER RECORDING on page 23”.

○ When an external signal is input, “E” will light on the digital display and recording will take place.

NOTES:

- Other timer recordings using the standard procedure can also be programmed.
- The external input signal must be input at the **EXT TIMER IN** terminal.

NORMAL PLAYBACK

Normal Playback

- ❶ Turn on the power to the VCR and TV monitor.
- ❷ Load the video cassette tape.
- ❸ Press the **REC/PLAY SPEED ▼** (or **▲**) button to select the playback speed mode.
 - *The selected playback speed mode is displayed on the digital display.*

NOTE:

- A slow motion effect or accelerated playback effect can be achieved by using a slower or faster playback speed than the speed used for recording.
- ❹ Press the **PLAY** button.
 - *Playback starts.*
 - *If necessary, adjust the tracking to eliminate the noise from the picture.*
 - *If the image is unstable (rolling vertically), adjust the vertical lock control to correct.*
 - ❺ To stop playback, press the **STOP** button.
 - *To advance or rewind the tape, press the **FF** or **REW** button.*

NOTES:

- If a tape recorded in SP mode on a standard VCR is loaded, playback will be done in 2-hour mode.
- A tape recorded on a time lapse VCR produced by another manufacturer may not play back with the same degree of clarity on this unit.

Tracking Control

If there is noise in the image during playback,

- ❶ While looking at the playback picture, press and hold the **TRACKING/V. STILL+** button to minimize the noise.
- ❷ If it cannot be minimized, press the **TRACKING/V. STILL-** button.

Vertical Lock Control

During still image mode,

- ❶ Press and hold the **TRACKING/V. STILL+** button to reduce the vertical rolling of the image.
- ❷ If it cannot be corrected, press the **TRACKING/V. STILL-** button.

Sharpness Control

Turn the **SHARPNESS** control clockwise or counterclockwise for the desired sharpness of the image.

Audio Playback

- Audio playback is only possible in 2-hour, 12-hour and 24-hour modes.
- The playback speed has to be the same as the recording speed, for normal playback of the audio.
- For a tape recorded in 12-hour and 24-hour recording modes, to playback the audio, press the **SEARCH/AUDIO ON** button after pressing the **PLAY** button. "A" will be displayed to the left of the playback speed on the digital display.

NOTE:

- Noise will appear in the image when audio playback is used in 12- or 24-hour modes.

SPECIAL PLAYBACK

Picture Search (Forward and Reverse)

- ❶ Press the **FF** (or **REW**) button, during normal playback.
 - *The image can be seen while the tape is advanced (or rewound) at high speed.*
- ❷ To return to normal playback, press the **PLAY** button.

NOTES:

- During picture search, noise (horizontal bars) will appear in the picture.
- The sound is muted.

Still Image

- ❶ Press the **STILL/PAUSE** button, during normal playback.
 - *A still image can be viewed.*
- ❷ To return to normal playback, press the **PLAY** button.

NOTES:

- If still mode continues for 5 minutes or more, the VCR will go into stop mode to avoid damaging the tape.
- If the image is unstable (rolling vertically), adjust the vertical lock control to correct.

Field Advance

- ❶ Press the **FF** (or **REW**) button, during still image mode.
 - *The still image is advanced (or rewound) of one image (field).*
- ❷ To return to normal playback, press the **PLAY** button.

NOTES:

- During reverse field advance, noise will appear in the picture.
- If field advance mode continues for 5 minutes or more, the VCR will go into stop mode to avoid damaging the tape.

Reverse Playback

- ❶ Press and hold the **REV** button, during normal playback.
 - *Reverse playback will start.*
- ❷ To return to normal playback, release the **REV** button.

NOTES:

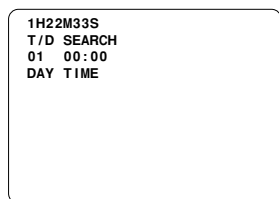
- During reverse playback, noise will appear in the picture.
- Reverse playback is only possible during 2-hour playback speed mode.
- The sound is muted.

DAY/TIME SEARCH

Day/Time Search

- 1 Press the **SEARCH** button three times during stop mode.

- "T/D SEARCH 01 00:00" will be displayed on screen.



- 2 Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the desired day, then press the ➡ button.
- 3 Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the desired hour, then press the ➡ button.
- 4 Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the desired minutes.

NOTES:

- The setting can be made in 10 minutes increments only.
 - For recordings made on other VCRs, the exact time may not be found even if the minutes are entered. For tapes recorded on older models of VCRs produced by this company (the ones without a minutes setting for the day/time search function), make sure to set the minutes to "00".
- 5 Press the **FF** (or **REW**) button.
 - The desired day/time is searched and a still image of the recording will appear on-screen.
 - 6 Press the **PLAY** button.
 - Playback will start.

NOTES:

- If during a search the end of the tape is reached, the tape will rewind and stop. If the beginning of the tape is reached, it will stop.
- The alarm and day/time data are recorded on the tape in a similar format. If they overlap, the alarm data will have the priority. Therefore, when searching for a day/time when an alarm recording was done, the day/time search will not stop at the desired location. In such a case, use alarm scan to find the desired recording location.
- The day/time search function may not operate correctly if searching for a timer recording time.
- If a recording on a tape extends for over a one month period, the same day may be present twice on the tape. If such a day is searched, since there is no month search setting, the desired day may not be found.

TAPE COUNTER

Using the counter, it is easy to find a desired recording.

- ❶ Press the **COUNTER RESET** button, at the beginning of the desired recording.
 - *The counter will be reset to "0_H 00_M 00_S".*
- ❷ Press the **COUNTER MEMORY** button.
 - *"M" is displayed on the digital display.*
 - *To cancel the counter memory function, press the **COUNTER MEMORY** button a second time.*
- ❸ After recording or playback, press the **REW** button from stop mode.
 - *The tape is rewound to the counter "0_H 00_M 00_S" reading.*
 - *If you rewind the tape past the "0_H 00_M 00_S" position, press the **FF** button.*

NOTES:

- There is no tape counter indication for the blank portions of the tape.
- In the 2-hour recording speed mode only, the tape counter indicates real hours, minutes and seconds.
- In the other recording speed modes, the tape counter indication is a ratio of the 2-hour mode base indication. (In 12-hour recording mode, each "second" of the tape counter actually represents approximately $12/2 + 1 = 7$ real seconds.)
- There may be a slight discrepancy between the position shown on the tape counter and the actual tape position.
- When rewinding the tape past the "0_H 00_M 00_S" position, a minus (–) sign will be displayed.

SETTING THE SECURITY LOCK

The security lock function is designed to prevent accidental stopping of recording if the **STOP** button is pressed inadvertently.

- ❶ While holding the **SHIFT** ➡ button, press the **REC/PLAY SPEED** ▲ button.
 - *"1" is displayed on the digital display.*

To cancel the security lock, while holding the **SHIFT** ➡ button, press the **REC/PLAY SPEED** ▼ button, "1" will be erased from the digital display.

NOTES:

- While the security lock is engaged all commands, except the one to cancel the security lock, are disabled.
- The security lock cannot be engaged while a menu is displayed.

SETTING THE BUZZER

A buzzer can be set to sound during alarm recording, if during recording the tape reaches the end, if buttons are pressed or if there is a mechanical failure that causes the tape to stop or be ejected, etc.

- 1 Press the **MENU** button until the (SET UP 2) menu is displayed.

<SET UP 2>		
*DISPLAY		
DATE		Y
TIME		Y
ALARM COUNT		Y
SPEED		Y
*BUZZER		
ALARM IN		Y
TAPE END		Y
KEY IN		N
WARNING		Y

- 2 Press the **→** (or **←**) button, until the desired item for which the buzzer function will be set is flashing.
- 3 Press the **▼** (or **▲**) button to set "Y" for the functions described below.

ALARM IN . . The buzzer will be heard during alarm recording.

TAPE END . . The buzzer will be heard when the end of the tape is reached during recording. To stop the buzzer, press the **STOP**, **EJECT**, **FF**, **REW** or **PLAY** button.

KEY IN The buzzer will be heard when one of the VCR buttons is pressed.

WARNING . . The buzzer will be heard if the heads are dirty and recording quality deteriorate, or if the tape stops or is ejected due to a problem with the internal mechanism. To stop the buzzer, press the **STOP** button.

- 4 Press the **SEARCH/AUDIO ON** button to save the setting.

NOTES:

- If "N" is set, the buzzer will not be heard.
- During timer recording mode, security lock engaged mode and alarm recording mode, the buzzer will not be heard when a button related to one of these modes is pressed, even if "Y" is set for the "KEY IN" item.

CHECKING POWER FAILURE, FAILURE DUE TO CONDENSATION AND USAGE DURATION

- 1 Press the **MENU** button until the (POWER FAILURE), (DEW) and (USED TIME) menu is displayed.

(POWER FAILURE) . . . The number of power failures, and the date and time of the most recent power failure and recovery are displayed.

(DEW) The number of failures due to condensation, and the date and time of the most recent failure and recovery are displayed.

(USED TIME) The video heads usage duration and the power on duration are displayed.

Example

<POWER FAILURE>		
002	FAILURE	12-25 07:15
	RECOVERY	12-25 07:30
<DEW>		
001	FAILURE	12-25 11:00
	RECOVERY	12-25 12:00
<USED TIME>		
VIDEO		00003H
POWER		00007H

- 2 Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.

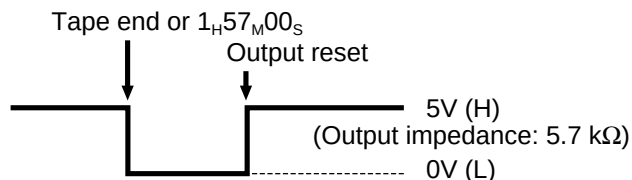
NOTE:

- If the **MENU RESET** button is pressed while the (POWER FAILURE) and (DEW) menu is displayed, the data is erased. The (USED TIME) data cannot be reset. "P" will be erased from the digital display.

OUTPUT TERMINALS

TAPE END OUT Terminal

- During recording, when the end of the tape is reached or when the tape counter reading indicates 1 hours 57 minutes or more, the output becomes 0V (Low).
- To reset the output, press the **STOP** or **EJECT** button.
- During autorepeat recording, when the end of the tape is reached, the output becomes 0V (Low) for about 2 seconds only.



TAPE END OUT Terminal Output Setting

- 1 Press the **MENU** button until the (SET UP 3) menu is displayed.

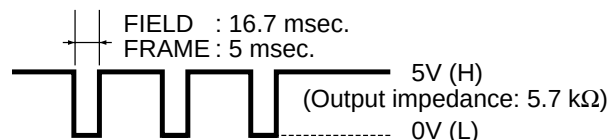
<SET UP 3>	
*ALARM MODE	Y1
*ALARM DURATION	20S
*TAPE IN MODE	STOP
*TAPE END MODE	REW
*TAPE END OUT	-3M
*CLOG DETECT.	Y

- 2 Press the **→** (or **←**) button, until the "TAPE END OUT" setting is flashing.
- 3 Press the **▼** (or **▲**) button, to select the desired output mode.
 - 3M The output becomes 0 V (Low) when the tape counter reaches "1h57m00s" and/or when the tape reaches the end.
 - END The output becomes 0 V (Low) when the tape reaches the end.
- 4 Press the **SEARCH/AUDIO ON** button to save the setting.

SW OUT Terminal

When recording, a pulse signal is output at the **SW OUT** terminal.

This terminal is usually connected to the switch input (SW IN) of devices like a camera switcher unit, or a quad compressor.



SW OUT Terminal Output Setting

- 1 Press the **MENU** button until the (SET UP 4) menu is displayed.
 - The *FIELD* (or *FRAME*) setting is flashing.

<SET UP 4>	
*SW OUT	
FIELD	01
TIMING	FIELD
2H	Y
*THREAD CHECK	Y
*VIDEO LOSS	N
*REC SPEED	N

NOTE:

- If "TIMING" is set to FRAME (see step 4), "FRAME" will be indicated instead of "FIELD".
- 2 Press the **▼** (or **▲**) button to set the desired pulse signal interval.

Available settings are:

FIELD 01, 02, 03, 04, 05, 10, 30 or 60 field

FRAME 01, 02, 03, 04, 05, 10, 30 or 60 frame
 - 3 Press the **→** button, until the "TIMING" setting is flashing.
 - 4 Press the **▼** (or **▲**) button to set "FIELD" or "FRAME".

FIELD 1 pulse is output after each set number of fields.

FRAME 1 pulse is output after each set number of frames.
 - 5 Press the **→** button, until the "2H" setting is flashing.
 - 6 Press the **▼** (or **▲**) button to set the desired "2H" mode.

Y When recording in 2-hour mode, a pulse signal is output.

N When recording in 2-hour mode, a pulse signal is not output.
 - 7 Press the **SEARCH/AUDIO ON** button to save the settings.

OUTPUT TERMINALS

REMOTE Jack

You can use a VA-RMN01 Remote Control Unit (sold separately) to control remotely the VCR.

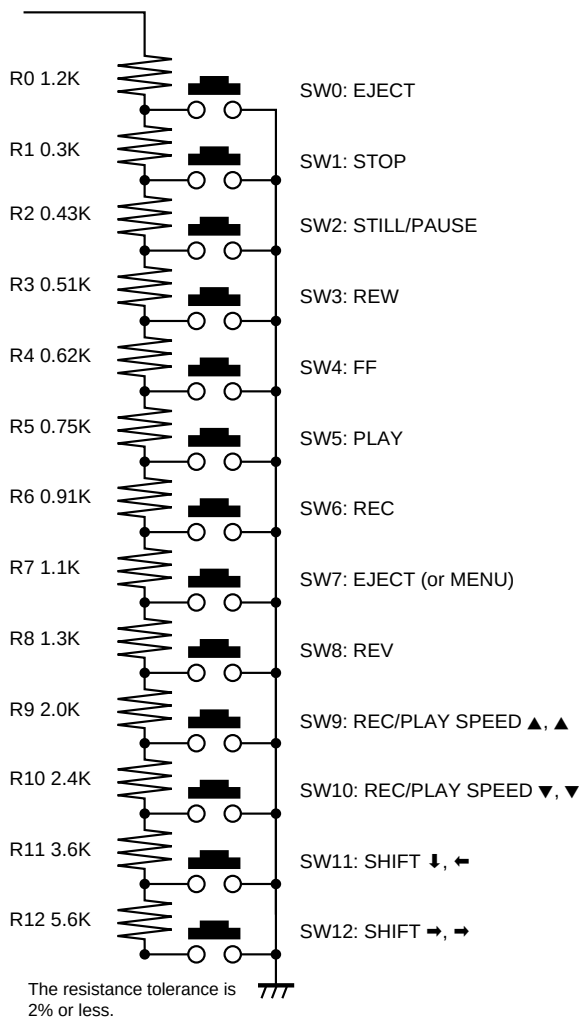
NOTE:

- The functions not available on the VCR will not operate.
- Remote control of the VCR is possible by connecting a remote controller with a circuit such as indicated below, to the **REMOTE** jack.

NOTES:

- Use a 3.5 mm mini-jack type plug.
- The connection should be done using a shielded cable no more than 5 meters long.
- The functions not available on the VCR will not operate.

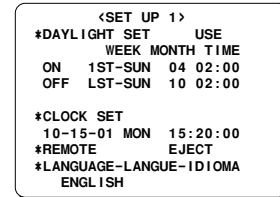
Remote control circuit



Remote control setting

The remote control switch 7 can be set to either eject the tape or access the menus.

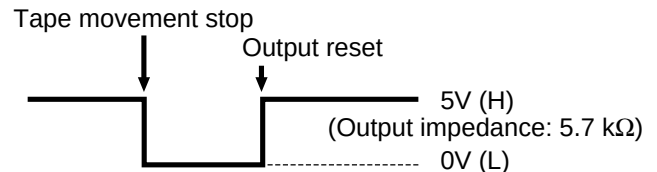
- 1 Press the **MENU** button until the (SET UP 1) menu is displayed.



- 2 Press the → (or ←) button, until the “REMOTE” setting is flashing.
- 3 Press the ▼ (or ▲) button to select the desired switch mode.
 EJECT Switch 7 will eject the tape.
 MENU Switch 7 will display the menu.
- 4 Press the **SEARCH/AUDIO ON** button to save the setting.

WARNING OUT Terminal

- If the tape stops or other problem, the output becomes 0V (Low).
- To reset the output, press the **STOP** or **ALL RESET** button or unplug the power cord then plug it back in.



NOTE:

- If the output is 0V (Low) due to the clog detect function, it can be reset by simply pressing the **STOP** button.

COM Terminal

- Common GND (ground) terminal when connecting other terminals to external devices.

MAINTENANCE

Daily Inspection

The following daily inspections are recommended in order to assure long-term and trouble-free operation of the unit.

The daily inspections are particularly important if using autorepeat recording.

Inspection Procedure

- ❶ Turn on the power to the VCR, camera, TV monitor and other connected devices.
- ❷ Check that the image received on the TV monitor is correct.
- ❸ Check that the on-screen display of the date and time is correct.
- ❹ To check the recording condition of the previous day, rewind the recorded tape a few seconds.
- ❺ Press the **PLAY** button and check that the playback image is correct.
- ❻ Check that the recorded date and time are correct.

NOTES:

- If the security lock is engaged, it has to be released before proceeding to the inspection.
- If any problem is discovered during the inspection, unplug the power cord then consult your dealer.

Periodic Inspection

Periodic inspection and maintenance should be referred to your dealer.

If there is noise in the playback picture, and it cannot be corrected using the tracking control, it may indicate that the video heads need cleaning.

The video heads should be inspected every 1,000 hours of use to determine if they need to be replaced.

The video heads usage can be checked using the (USED TIME) menu.

Cabinet Cleaning

Clean the outside of the cabinet with a clean, soft cloth, moistened with lukewarm water and wrung dry.

DO NOT USE SOLVENTS OR OTHER TYPES OF CLEANERS. THESE CHEMICALS CAN CRACK OR DISCOLOR THE CABINET.

About the Backup Battery

The date and time settings are maintained for up to 30 days by a rechargeable lithium battery that is fully charged after the VCR has been connected to a power source for 48 hours or more.

Depending on the battery usage it may become necessary to change it. For replacement and disposal of the old battery, please contact your dealer.

After the battery has been replaced, press the **ALL RESET** button, then enter all the time, date, etc. settings as required.

MAINTENANCE

Maintaining and Checking The Mechanism

To maintain the VCR functions and features working properly, and to avoid damages or dirt on the tape, it is recommended to follow the maintenance points and periodicity indicated below.

For detailed information, please contact your dealer.

Maintenance Table

○ : Cleaning ◎ : Confirmation △ : Lubrication □ : Change

	PARTS	2000H	4000H	6000H	8000H	NOTES
Tape Path System	ASSY, BRAKE BAND	◎	□	◎	□	
	ASSY, LEVER BT (tape guide)	○	○	○	○	
	FULL ERASE HEAD	○	○	○	□	
	ASSY, ROLLER CLEANER	◎	□	◎	□	
	ASSY, GUIDE ROLLER	○	○	○	○	
	ASSY, MOUNTING INCLNE S	○	○	○	□	
	ASSY, MOUNTING INCLNE T	○	○	○	□	
	ACE HEAD	○	○	○	□	
	ASSY, LEVER PINCH ROLLER	○	□	○	□	
	MOUNTING, LIFT PINCH				□	
	CAM, LIFT PINCH				□	
	GEAR, CAM PINCH				□	
	ASSY, EARTH CYL		□		□	
	COMPL, CYLINDER	○	○(□)	○	○(□)	
	ASSY, CYLINDER UPPER	○(□)	○(□)	○(□)	○(□)	
Reel Drive System	ASSY, REEL SUPPLY	○△	○△	○△	○△	
	ASSY, REEL TAKEUP	○△	○△	○△	○△	
	GEAR, REEL S	△	△	△	△	
	GEAR, REEL T	△	△	△	△	
	PULLEY, REEL	△	△	△	△	
	SPECIAL, WASHER 2.4 X 6 X 0.25		◎		◎	
	COMPL, MOUNTING CLUTCH	△	□	△	□	
	BELT, REEL	◎	□		□	
	MOTOR, CAPSTAN	○	◎(□)	◎(□)	□	
	ASSY, GEAR FRICTION	△	△□	△	△□	
Brake	ASSY, BRAKE S	◎	◎	◎	◎	
	ASSY, BRAKE T	◎	◎	◎	◎	
	ASSY, BRAKE CAPSTAN	◎	◎	◎	◎	
	ASSY, BRAKE SOFT T		◎		□	
Loading Drive System	ASSY, LOADING MOTOR		◎		□	
	DAMPER				□	
	COMPL, GEAR WORM		◎		□	
	CAM, MAIN				□	
	SPECIAL WASHER 3.6 X 0.5		◎		□	
	GEAR, WHEEL 1				□	
	GEAR, WHEEL 2		◎		□	
	MODE SWITCH		◎		□	
	SLIDE, CRECENT		◎		□	
	GEAR, LOAD S		◎		□	
	GEAR, RACK FRONT		◎		□	
	GEAR, RACK START		◎		□	
	GEAR, PINON		◎		□	
Performance Check	BACK TENSION TORQUE	◎	◎	◎	◎	PB BACK TENSION TORQUE 25~50g·cm
	FWD, REW TORQUE	◎	◎	◎	◎	FWD, REW TORQUE ≥ 600g·cm
	PLAY TORQUE	◎	◎	◎	◎	PLAY 55 ~ 110g·cm
	REV TORQUE	◎	◎	◎	◎	REV 100 ~ 210g·cm

NOTES:

1. This table shows the maintenance for up to 8000 hours. After this, repeat from the start of the table.
2. For places with symbols such as ◎ (□) and ○ (□), carry out checking and cleaning, and replace if necessary.
3. This periodic maintenance check table changes considerably according to the using conditions and environment.
4. Refer to (USED TIME) menu for the length of time the unit has been used.
5. As life may be shortened if foreign particles and dusts remain accumulated on the tape guides and rotating and contacting portions, clean if dirty.
6. Dusts and other foreign particles on the tape guides may also shorten the tape life and lower picture quality, therefore clean thoroughly.

TROUBLESHOOTING GUIDE

If the unit does not operate normally when you follow the instructions indicated in the manual, please refer to the table below.

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
No power	The power cord is not connected	Connect the power cord
No image displayed on the monitor TV	The connections are not correct	Check that all connections are correct
	The power to the camera and/or monitor TV is not turned on	Turn all connected devices power on
The buttons do not respond	A cassette tape is not loaded	Load a cassette and turn the power on
	All functions are suspended due to condensation	Wait for the “ <i>dddd</i> ” indicator to go off
	Alarm recording	Wait for the alarm recording to end
	The security lock is engaged	Cancel the security lock
Recording is not possible (the tape is ejected)	The loaded cassette has no erasure-prevention tab	Load a cassette tape with erasure-prevention tab or cover the tab hole with adhesive tape
Autorepeat recording is not possible	“AL” is displayed on the digital display	Display (ALARM TIME) menu, then press the MENU RESET button to turn off the “AL” indicator
Timer recording is not possible	The date and time are not set correctly	Set the date and time correctly
	The unit is not set to timer recording stand-by mode	Press the TIMER button to display “  ” on the digital display
	“N” is selected for the timer recordings	Be sure to select “Y” for the programmed timer recordings
Alarm recording is not possible	“OFF” is displayed on the digital display	Press the EJECT , STOP , FF , REW or PLAY button to turn the indicator off
Noise in the playback picture	The video heads need cleaning	Clean the video heads
The date and time are not recorded	The ON SCREEN switch is set to the “OFF” position	Set the ON SCREEN switch to the “ON” position
The cassette tape cannot be ejected	Problem with the system	Unplug the power cord then plug it back in
The cassette is ejected a few seconds after it has been inserted	The tape is not threaded correctly	Try inserting the cassette one more time or using a new cassette. If it is ejected again, please consult your dealer.

After a Power Failure

If after a power failure the recording speed is reset to 2-hour mode, it is due to insufficient backup battery charge. This is not a malfunction.

System Down

If the unit does not function at all, try the following.

- ❶ Unplug the power cord then plug it back in.
- ❷ Reset the memory. (Press the **ALL RESET** button. Under normal conditions, do not touch the **ALL RESET** button.)

NOTE:

- The time and date will be reset, and the security lock will be cancelled.
- ❸ If the problem is not corrected after performing steps ❶ and ❷ a few times, consult your dealer.

SPECIFICATIONS

General Specifications

Video heads system	Dual-azimuth 4-head rotating helical scanning system: Dual azimuth 2-head for record and standard playback Dual azimuth 4-head for forward picture search, reverse picture search and still mode
Audio recording	In 2-, 12- and 24-hour modes
Tape speed	33.35 mm /sec (2-hour mode)
Specified video cassette tape	VHS 1/2 inch video cassette tape
Recording/playback time	2, 12, 24, 48 and 72 hours (when using T-120 tape)
Fast forward/rewind time	approximately 2 minutes 45 seconds (when using T-120 tape)
Television system	NTSC color TV system

Video

Recording method	Luminance signal: FM recording Chrominance signal: Down-converted direct recording
Video input	1 V(p-p), BNC, 75 Ω , unbalanced
Video output	1 V(p-p), BNC, 75 Ω , unbalanced
Horizontal resolution	Black & white mode 350 line or more Color mode 300 line or more

Audio

Input	-8 dBs, RCA pin jack, 27 k Ω , unbalanced
Output	-8 dBs, RCA pin jack, 600 Ω , unbalanced
Microphone input	-60 dBs, 3.5 mm mini jack, 10 k Ω , unbalanced

Connectors

Alarm input	Low level active (0V 100msec or more)
Alarm output	DC 5 V (± 0.5)/5.7 k Ω , Low at alarm
Switch output	DC 5 V (± 0.5)/5.7 k Ω , Low at switching
Tape end output	DC 5 V (± 0.5)/5.7 k Ω , Low at tape end
Warning output	DC 5 V (± 0.5)/5.7 k Ω , Low at warning
Ext timer input	Low level active (0V 100msec or more)
Common	0 V (GND)
Remote control input	3.5 mm mini jack

Other Specifications

Operating temperature range	5°C to 40°C
Operating humidity range	80% or less
Power requirements	120 V AC, 60 Hz
Power consumption	17 W
Dimensions	420 (W) x 99.5 (H) x 295.5 (D) mm
Weight	approximately 4.4 kg

NOTE: The specifications and external appearance of this unit are subject to change without notice.

SANYO INDUSTRIAL VCR WARRANTY

OBLIGATIONS

In order to obtain warranty service, the product must be delivered to and picked up from an Authorized Sanyo Service Center at the user's expense, unless specifically stated otherwise in this warranty. The names and addresses of Authorized Sanyo Service Centers may be obtained by calling the toll-free number listed below.

For product operation, authorized service center referral, service assistance or problem resolution, call

CUSTOMER INFORMATION 1-800-421-5013

Weekdays 8:30 AM – 5:00 PM Pacific Time

For accessories and/or parts, call

PARTS ORDER INFORMATION 1-800-726-9662

Weekdays 8:30 AM – 5:00 PM Pacific Time

THIS WARRANTY IS VALID ONLY ON SANYO PRODUCTS PURCHASED OR RENTED IN THE UNITED STATES OF AMERICA, EXCLUDING ALL U.S. TERRITORIES AND PROTECTORATES. THIS WARRANTY APPLIES ONLY TO THE ORIGINAL RETAIL PURCHASER OR END-USER. THE ORIGINAL DATED BILL OF SALE, SALES SLIP OR RENTAL AGREEMENT MUST BE SUBMITTED TO THE AUTHORIZED SANYO SERVICE CENTER AT THE TIME WARRANTY SERVICE IS REQUESTED.

Subject to the OBLIGATIONS above and EXCLUSIONS below, SANYO Fisher Company warrants this SANYO product against defects in materials and workmanship for the periods specified below. SFC will repair or replace (at its option) the product and any of its parts which fail to conform to this warranty. The warranty period commences on the date the product was first purchased or rented at retail.

LABOR	PARTS	VIDEO HEADS
1 YEAR	1 YEAR	90 DAYS

EXCLUSIONS

This warranty does not cover (A) the adjustment of customer-operated controls as explained in the appropriate model's instruction manual, or (B) the repair of any product whose serial number has been altered, defaced or removed.

This warranty shall not apply to the cabinet or cosmetic parts, batteries or routine maintenance.

This warranty does not apply to uncrating, setup, installation, removal of the product for repair or reinstallation of the product after repair.

This warranty does not apply to repairs or replacements necessitated by any cause beyond the control of SFC including, but not limited to, any malfunction, defect or failure caused by or resulting from unauthorized service or parts, improper maintenance, operation contrary to furnished instructions, shipping or transit accidents, modification or repair by the user, abuse, misuse, neglect, accident, incorrect power line voltage, fire, flood or other Acts of God, or normal wear and tear.

The foregoing is in lieu of all other expressed warranties and SFC does not assume or authorize any party to assume for it any other obligation or liability.

SFC DISCLAIMS ALL OTHER WARRANTIES EXPRESS OR IMPLIED, WITH REGARD TO THIS PRODUCT (INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS). IN NO EVENT SHALL SFC BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE OWNERSHIP OR USE OF THIS PRODUCT OR FOR ANY DELAY IN THE PERFORMANCE OF ITS OBLIGATIONS UNDER THIS WARRANTY DUE TO CAUSES BEYOND ITS CONTROL. SFC'S LIABILITY FOR ANY AND ALL LOSSES AND DAMAGES RESULTING FROM ANY CAUSE WHATSOEVER, ARISING OUT OF OR IN CONNECTION WITH THE SALE, USE OR OWNERSHIP OF THIS PRODUCT INCLUDING WARRANTOR'S NEGLIGENCE, ALLEGED DAMAGED OR DEFECTIVE GOODS, WHETHER SUCH DEFECTS ARE DISCOVERABLE OR LATENT, SHALL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE PRODUCT.

ATTENTION

For your protection in the event of theft or loss of this product, please fill in the information below for you own personal records.

Model No. _____

Serial No. _____

(Located on back or bottom side of unit.)

Date of Purchase _____

Purchase Price _____

Where Purchased _____

